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4 Industrial work culture in vocational learning: a relevance to occupational world

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Abstract. The industrial work culture (IWC), especially in the manufacturing industry, is very complex and has the potential to be explored for continuous improvement in vocational learning. This study aimed to measure the level of IWC implementation in manufacturing industries and in the Diploma-III of Mechanical Engineering of Engineering Faculty of Yogyakarta State University (D-III ME YSU) and measure the relevance of IWC implementation in ME D-III YSU to IWC implementation in the manufacturing industry. This study used the survey method. The population consisted of two parts, the first was the D-III students, and the second were the manufacturing industry in DIY, Central Java, and Jakarta province. The subjects of this study were staff of industrial employees. The sample determined by purposive sampling technique. The study results showed that the IWC implementation level in industries as a whole included in the "high" category with an achievement score of 82% and IWC implementation level in D-III ME YSU included in the "high" category with an achievement score of 80%. In addition, the relevance of IWC implementation in D-III ME YSU to IWC implementation in the industries as a whole reached 97% "high".

1. Introduction

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The world of vocational education is very closely related to the business world and the industrial world. The purpose of vocational education is to prepare graduates to enter the workforce to work in certain fields. Vocational education has a special task of producing graduates who are ready to work, but in reality, the unemployment rate of Diploma graduates (vocational) is still classified as a higher percentage compared to graduates from Bachelors. Diploma graduates still dominate the higher open unemployment rate compared to graduates. The Indonesian Central Statistics Agency (2017) released the highest level of unemployment found in graduates of the Vocational High School at 11.41%, Senior High School at 8.29%, Diploma graduates at 6.88%, Junior High School graduates by 5.54%, Universities (S1) by 5.18% and the lowest unemployed elementary school graduates by 2.62%. The data can be a reference in assessing the perspectives of vocational education graduates in Indonesia that cannot yet be fully absorbed by the industrial world. However, it cannot necessarily be concluded that diploma graduates have failed in carrying out their role in competing with undergraduate graduates because many influential factors are related to the achievement of the objectives of the vocational program, especially diploma levels.

Two possibilities make reasons why graduates of vocational education cannot be fully accepted by the industry, namely the skills and work culture possessed by graduates. Both of these factors greatly influence the industry to be able to accept graduates to join companies. Many industry perpetrators in



Indonesia say that vocational education graduates (diplomas) require a long time to adapt to the work culture that exists in the industry.

The Minister of Industry in website portal (<http://www.kemenperin.go.id>) in November 2017 mentioned, emphasized that vocational education should be better in carrying out educational activities, especially strengthening in three areas, namely skills, knowledge, and attitude (work culture). The three fields are considered to be indispensable by the industrial world. Vocational education graduates are expected to be able to adapt quickly to the industry where they work.

The world of vocational education does have the responsibility of producing graduates ready to work, but most still consider work in the industry to be limited to processing raw goods into finished goods so that the learning that carried out only focuses on increasing practical competence only. Success in carrying out work in industry is not only related to practical competence, but also closely related to the work culture that must be possessed by an employee. Some research results on industrial culture [1] and [2], showed that work culture influences employee performance and company performance.

Vocational education must be able to ensure the alignment of practical competencies and the alignment of work culture in vocational learning with the industrial work culture. This is important because vocational education is the backbone in preparing graduates who are ready to work according to the needs of the industry to support the economy. Vocational education can play an instrumental role in developing a new generation of individuals who will be competent and be willing to face the challenges in order to achieve socio-economic development [3]. Therefore there needs to be an in-depth mapping of what work culture is used by industry and what kind of work culture is applied in vocational learning.

The work culture of the industry, especially the manufacturing industry at this time has not received much public attention. Even though industrial work culture is very complex and there is much that we can explore its potential for continuous improvement. The work culture that must be possessed by employees of a company especially the manufacturing industry is 5S [4]. The 5S stands for *shitsuke, seiketsu, seiso, seiton* and *seiri*. In Indonesia 5S is familiar as 5R, which stands for *rajin, rawat, resik, rapi* and *ringkas*. In Japanese philosophy, the manufacturing industry is also guided by the terms "do it right at the first time", "zero defect", "zero discrepancies". The implementation of IWC is also implemented by the Indonesia Ministry of Industry. Currently, the Ministry of Industry applies five values and work culture including integrity, professional, innovative, productive, and competitive.

Based on the description above, how the practical competencies needed by the industry, but preparing human resources with good personalities and having a work culture that is in harmony with the industry is also very necessary and even very important. So far there has been very little research on how relevant IWC implementation in vocational education to IWC implementation in industry. Relevance research can be used as a reference by managers of vocational education to find out the aspects of IWC that must be improved or defended through learning that can accommodate IWC to suit industry needs.

2. Method

This study used a survey method. Data collection techniques used with a guide instrument that has been made. The population of this study consisted of two parts, the first was the students of D-III Mechanical Engineering YSU and the second was the manufacturing industry in DIY, Central Java and Jakarta. The subjects of this study were staff of industrial employees. The sample determined by purposive sampling technique so that the desired sample was in accordance with the research objectives

The variables of this study were: (1) the variable "industrial work culture in DIY, Central Java and Jakarta province" is used to determine the work culture that has been used by the industrial world and is used to measure the level of each work culture that has been carried out at the industrial level; and (2) the variable "work culture in practical lectures in D-III ME YSU " is used to determine how far the

level of work culture that has been applied to lectures. Next, the two variables compared to find out the level of relevance.

Each of these variables measured in IWC aspects: (1) Discipline culture (*shitsuke*), (2) Cleanliness culture (*seiketsu*), (3) Caring culture (*seiso*), (4) Concise culture (*seiri*), (5) Neat culture (*seiton*), (6) "Working totally" culture, (7) "Sustainable learn" culture, (8) "Occupational safety and health" culture, (9) "Do it right from the first time" culture, (10) "Zero defect" culture, (11) "Zero discrepancies" culture, (12) Professional culture, (13) Integrity culture, (14) Innovative culture, (15) Competitive culture, and (16) Productive culture.

Collecting data on the implementation level of IWC in the industry used observation method and collecting data on the level of IWC implementation in D-III ME YSU used a focus group discussion (FGD) method. The logical validity test of this research instrument used the expert judgment method. Empirical validity was done by testing the instrument directly on respondents then analyzed with product-moment correlation analysis of Carl Pearson. Reliability test used the formula Alpha Coefficient Reliability.

3. Result & Discussion

The companies that have become the sample of this research were companies/industries that were the destination of the students after they graduate. Industries are grouped into 3 clusters, namely large industries, medium industries, and small industries. This is based on the Minister of Industry Regulation No. 64 of 2016 which states that industrial clustering is based on several aspects, there were: (a) the number of workers, (b) the level of technological sophistication and (c) the amount of investment.

Table 1. Industrial clustering

Large Industry	Medium Industry	Small Industry
PT. Pertamina Persero Refinery Unit IV	PT. Mekar Armada Jaya	PT. MBG Putra Mandiri
PT. Pamapersada Nusantara	PT. Wahana Duta Rucika	UPT Logam
PLTU Indramayu	CV. Karya Hidup Sentosa	CV. Tunas Karya
PT. Astra Daihatsu Motor Assy Plant	PT. Mega Andalan Kalasan	UD Rekayasa Wangdi
PT. Komatsu Indonesia	CV. Dlimas Logam Jaya	Bengkel Jasatech
		PT. Bonjor Jaya

Scores of IWC implementation in large industries, medium industries, small industries and in D-III ME YSU can be seen in table 5. Scores of IWC implementation in industry and in D-III ME YSU obtained by comparing the total scores achieved (empirical) with the ideal total score set.

Table 2. Comparison of IWC implementation level in large industries, medium industries, small industries, & D-III ME YSU (%).

No	IWC Aspect	All of industries (%)	Large industries (%)	Medium industries (%)	Small industries (%)	D-III of ME YSU (%)
1	Discipline culture (shitsuke)	H 81.0	H 89.3	H 87.9	M 68.5	M 74.8
2	Cleanliness culture (seiketsu)	H 83.8	H 95.0	H 92.5	M 67.2	H 79.7
3	Caring culture (seiso)	H 82.8	H 98.0	H 91.0	M 63.3	M 73.0
4	Concise culture (seiri)	H 79.9	H 92.5	H 91.3	M 59.9	H 75.3
5	Neat culture (seiton)	H 85.2	H 100	H 100	M 60.4	H 80.6
6	“Working totally” culture	H 86.9	H 93.0	H 87.0	H 81.7	H 95.6
7	“Sustainable learn” culture	H 77.7	H 93.8	H 86.3	M 57.3	H 85.6
8	“Occupational safety and health” culture	H 83.2	H 91.9	H 88.1	M 71.9	H 82.5
9	"Do it right from the first time" culture	H 84.0	H 93.8	H 88.8	M 71.9	H 82.5
10	"Zero defect" culture	H 85.2	H 93.8	H 87.5	H 76.0	H 85.0
11	"Zero discrepancies" culture	H 86.3	H 90.0	H 92.5	M 78.1	H 81.3
12	Professional culture	H 86.7	H 92.5	H 88.8	H 80.2	M 75.0
13	Integrity culture	H 82.3	H 96.7	H 86.7	M 66.7	H 83.3
14	Innovative culture	H 84.4	H 93.3	H 90.0	M 72.2	H 88.3
15	Competitive culture	H 77.0	H 92.5	H 81.3	M 60.4	M 71.9
16	Productive culture	M 71.9	H 90.0	M 73.3	M 55.6	M 66.7
	All aspect	H 82	H 94	H 89	M 68	H 80

Note:

- H = high (75% < x ≤ 100%)
- M = medium (50% < x ≤ 75%)
- L = low (25% ≤ x ≤ 50%)

The percentage of the level of IWC implementation contained in table 2 used to determine the level of relevance of the implementation of IWC. The relevance level obtained by comparing the results of the percentage score of IWC implementation in D-III ME YSU with the percentage score of implementation of IWC in industry.

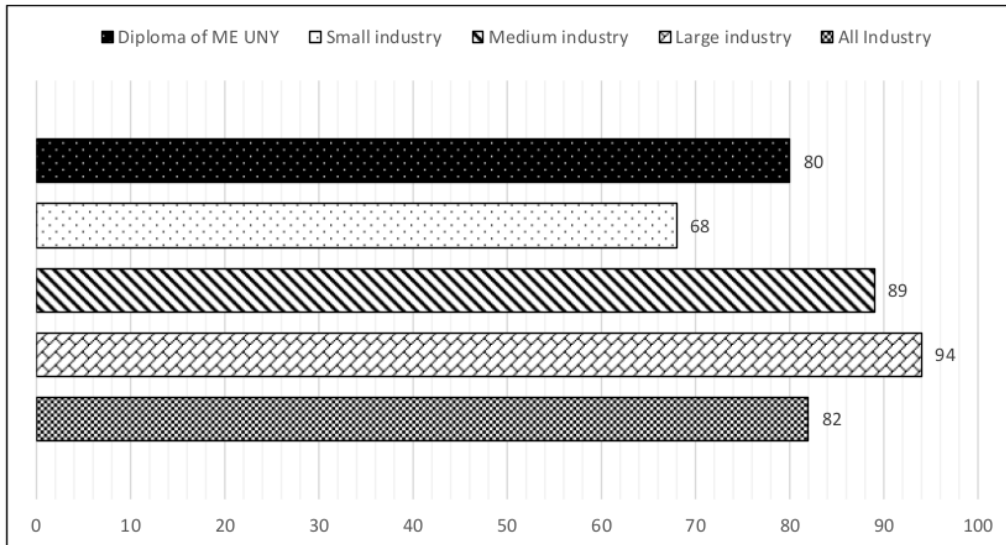


Figure 1. Percentase implementation of industrial work culture.

Figure 1 showed that the percentage of IWC implementation in D-III ME YSU, small industry, medium industry, large industry and industry as a whole. Implementation of IWC in the industry as a whole reached 82%, in the large industry was 94%, in the medium industry was 88% and the small industry was 68%. Implementation of IWC in D-III ME YSU reached 80%. These findings were in line with the research of [5] who revealed that the implementation of IWC in Automotive Diploma students has been running well but there were still some indicators that showed lack, namely indicators of creativity and innovation. The case was almost the same as this research, which was still several aspects of IWC that need to be improved through learning in the workshop modified.

The percentage of IWC implementation in D-III ME YSU and the implementation of IWC in large, medium and small industrial industries, can be used as a basis for mapping the position of D-III ME YSU for each industry cluster. The position of D-III ME YSU has exceeded 12%, bigger than the small industrial but it was at 9% below the medium industry and still lags 14% below the large industry. Meanwhile, when juxtaposed with the industry as a whole, D-III ME YSU was only a difference of 2% (All industries: 82%, D-III ME YSU: 80%).

The relevance of IWC in D-III ME YSU to IWC in the industry as a whole reached 97%. This result was obtained by comparing the percentage of IWC implementation scores in D-III ME YSU with the percentage of IWC implementation scores in the industry. In detail, the level of relevance in 16 aspects of IWC can be seen in table 3.

Table 3. Level of relevance IWC implementation in D-III ME YSU to IWC implementation in industry

No	IWC Aspect	Level of relevance (%)			
		to all	to large industries	to medium industries	to small industries
1	Discipline culture (shitsuke)	92	84	85	100 +
2	Cleanliness culture (seiketsu)	95	84	86	100 +
3	Caring culture (seiso)	88	74	80	100 +
4	Concise culture (seiri)	94	81	82	100 +
5	Neat culture (seiton)	95	81	81	100 +
6	"Working totally" culture	100 +	100 +	100 +	100 +
7	"Sustainable learn" culture	100 +	91	99	100 +
8	"Occupational safety and health" culture	99	90	94	100 +
9	"Do it right from the first time" culture	98	88	93	100 +
10	"Zero defect" culture	99	91	97	100 +
11	"Zero discrepancies" culture	94	90	88	100 +
12	Professional culture	86	81	84	94
13	Integrity culture	100 +	86	96	100 +
14	Innovative culture	100 +	95	98	100 +
15	Competitive culture	93	78	88	100 +
16	Productive culture	92	74	91	100 +
	Overall relevance	97	85	90	100 +

Table 3 showed that overall, the relevance of IWC in D-III ME YSU to IWC implementation in manufacturing industry can be said to be very relevant (97%), but some aspects of IWC need to be improved especially aspects of disciplinary culture, care culture, professional culture, competitive culture and productive culture so that graduates have IWC according to industry needs. The level of IWC that graduates have will affect their performance in the industry. Study results of [6] revealed that there was a positive relationship between the level of implementation of 5s and productivity in the company.

4. Conclusion

Implementation of IWC in the industry as a whole reached 82%, in details: for large industry reached 94%, for medium industry reached 88% and for small industry reached 68%. Implementation of IWC in D-III ME YSU reached 80%. The relevance of IWC in D-III ME YSU to IWC implementation in manufacturing industry as a whole reached 97% (high), in details: relevance to large industry 85%; relevance to medium industry 90%; and relevance to small industry 100%. This result was quite satisfying but some aspects of IWC need to be improved especially aspects of disciplinary culture, care culture, professional culture, competitive culture and productive culture so that graduates have IWC according industry needs. Vocational learning needs to be specifically designed to enhance these cultures so that D-III ME YSU students have an IWC that is relevant to industry needs.

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